

Therefore, what is claimed, is:

1. An electrode arrangement for electrical stimulation of biological material, having at least one stimulation electrode via which the biological material can be fed a stimulus signal, and having at least one counter electrode which forms a counter pole to the stimulation electrode, wherein at least one sensor electrode is provided with the aid of which it is possible to determine a polarization voltage across the stimulation electrode.
2. The electrode arrangement of claim 1, which further includes a difference element with at least two inputs, a first input being connected to the stimulation electrode, and a second input being connected to the sensor electrode.
3. The electrode arrangement of claim 1, which further includes an interrupter which interrupts the stimulus signal as a function of the determined polarization voltage.
4. The electrode arrangement of claim 2, which further includes an interrupter which interrupts the stimulus signal as a function of the determined polarization voltage.
5. The electrode arrangement of claim 3, wherein the interrupter is a changeover switch which short-circuits the stimulation electrode and the counter electrode.
6. The electrode arrangement of claim 4, wherein the interrupter is a changeover switch which short-circuits the stimulation electrode and the counter electrode.
7. The electrode arrangement of claim 1, which further includes a control loop which varies at least one parameter of the stimulus signal as a function of the determined polarization voltage.
8. The electrode arrangement of claim 1, which further includes a memory in which a maximum value of the polarization voltage can be stored.
9. The electrode arrangement of claim 8, wherein the memory can be written to and/or read from in a wireless fashion.
10. The electrode arrangement of claim 1, wherein the sensor electrode is arranged in the immediate vicinity of the stimulation electrode.

11. The electrode arrangement of claim 1, wherein the sensor electrode is arranged next to the stimulation electrode.
12. The electrode arrangement of claim 1, wherein the sensor electrode is arranged concentrically with the stimulation electrode.
- 5 13. The electrode arrangement of claim 1, wherein the sensor electrode at least partially surrounds the stimulation electrode.
14. The electrode arrangement of claim 1, wherein the sensor electrode is arranged in a cutout in the stimulation electrode.
- 10 15. The electrode arrangement of claim 1, wherein the sensor electrode and the stimulation electrode are planar structures.
16. The electrode arrangement of claim 1, wherein the sensor electrode is small by comparison with the stimulation electrode.
17. The electrode arrangement of claim 1, wherein the sensor electrode and the stimulation electrode are produced from the same material.
- 15 18. The electrode arrangement of claim 1, wherein a multiplicity of stimulation electrodes and a multiplicity of sensor electrodes (18) are arranged on a common substrate (42).
19. The electrode arrangement of claim 18, wherein at least one sensor electrode is arranged in the region of each stimulation electrode.
- 20 20. A retina implant for electrical stimulation of biological material, having at least one stimulation electrode via which the biological material can be fed a stimulus signal, and having at least one counter electrode which forms a counter pole to the stimulation electrode, wherein at least one sensor electrode is provided with the aid of which it is possible to determine a polarization voltage across the stimulation electrode.
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21. The retina implant of claim 20, wherein a multiplicity of stimulation electrodes and a multiplicity of sensor electrodes are arranged on a common substrate (42).

22. The retina implant of claim 21, which further includes a difference element with at least two inputs, a first input being connected to the stimulation electrode, and a second input being connected to the sensor electrode.
- 5 23. A retina implant for electrical stimulation of biological material, having at least one stimulation electrode via which the biological material can be fed a stimulus signal, and having at least one counter electrode which forms a counter pole to the stimulation electrode, wherein at least one sensor electrode is provided with the aid of which it is possible to determine a polarization voltage across the stimulation electrode, and wherein a multiplicity of stimulation electrodes and a multiplicity of sensor electrodes are arranged on a common substrate.
- 10 24. The retina implant of claim 23, which further includes a difference element with at least two inputs, a first input being connected to the stimulation electrode, and a second input being connected to the sensor electrode.